

SB
B
A

mechanical designs (hereinafter, simply designs), while browser **104** facilitates display of the modeled designs and related information for the designer, as well as facilitates input by the designer. However, unlike prior art, in accordance with the present invention, modeler **102** models designs employing dependent graphs, and using data **106a-106b** suitably organized for the dependent graph approach, to be described more fully below, whereas browser **104** not only facilitates display of the designs **108a-108b** and their dependant graphs **110a-110b**, but facilitates their displays in a novel coordinated manner. As will be readily apparent from the description to follow, the present invention advantageously enables a designer to be able to efficiently reuse subparts of one design in another design. In particular, the present invention advantageously enables a designer to be able to efficiently explore the interrelationship between various subparts of a modeled design and its dependant graph, thereby allowing the designer to efficiently leverage on the reuse support offered by CAD tool **100**.--

In the Claims:

Please amend the claims 1, 8, 16, 25, and 26 as follows:

1. (Amended) In a computer system, a method of operation comprising:
- replicating a sub-graph from a first dependent graph of a first mechanical design
- of a computer aided design (CAD) tool, the first dependent graph having modeling
- AY

information of the first mechanical design and the replicated sub-graph having modeling information of a subpart of the first mechanical design; and

merging the replicated sub-graph into a second dependent graph of a second mechanical design of the CAD tool to reuse the subpart of the first mechanical design in the second mechanical design.

2. (Amended) The method of operation of claim 1 further comprising receiving identification of the subpart of the first mechanical design, and in response, identifying the sub-graph for replication.

3. (Amended) The method of operation of claim 2, wherein

said first dependent graph includes a first plurality of nodes correspondingly represent a first plurality of design variables of the first mechanical design, and a first plurality of arcs linking the first plurality of nodes in accordance with the first plurality of design variables' dependency on one another; and

said identification of the sub-graph for replication comprises correlating said received identification of the subpart to one or more nodes of said first plurality of nodes directly associated with the subpart, and following applicable ones of said first plurality of arcs to identify all other nodes of said first plurality of nodes to which the directly associated nodes are directly or indirectly dependent on.

4. (Amended) The method of operation of claim 3 wherein said replication comprises copying said directly associated nodes, said nodes on which the directly associated nodes are dependent on, and the arcs linking these nodes to one another.

5. (Amended) The method of operation of claim 4, wherein
selected ones of the design variables of said replicated sub-graph are set to constant values, while others are eligible to have values variably assigned; and
the method of operation further comprises receiving instructions to transform selected ones of the design variables set to constant values to design variables eligible for having values variably assigned, or to transform selected ones of the design variables eligible for having values variably assigned to having constant values assigned.

6. (Amended) The method of operation of claim 1 further comprising receiving identification of a point or an area of the second mechanical design to reuse the subpart of the first mechanical design in the second mechanical design.

7. (Amended) The method of operation of claim 6, wherein
said second dependent graph includes a second plurality of nodes correspondingly represent a second plurality of design variables of the second mechanical design, and a second plurality of arcs linking the second plurality of nodes in accordance with the second plurality of design variables' dependency on one another; and

said merging comprises correlating said received identification of the point/area to one or more nodes of said second plurality of nodes directly associated with the identified point/area, and attaching the replicated sub-graph to the second dependent graph by selectively linking nodes of the replicated sub-graph to the correlated nodes of the second dependent graph.

8. (Amended) An article of manufacture comprising:

4
A a recordable medium having recorded thereon a plurality of programming instructions for use to program an apparatus to enable the apparatus to be able to replicate a sub-graph from a first dependent graph of a first mechanical design of a computer aided design (CAD) tool, the first dependent graph having modeling information of the first mechanical design and the replicated sub-graph having modeling information of a subpart of the first mechanical design, and to be able to merge the replicated sub-graph into a second dependent graph of a second mechanical design of the CAD tool to reuse the subpart of the first mechanical design in the second mechanical design.

16. (Amended) An apparatus comprising:

h
A at least one storage medium having stored therein a first and a second plurality of programming instructions; and

at least one processor coupled to the at least on storage medium to execute the first plurality of programming instructions to replicate a sub-graph from a first dependent graph of a first mechanical design of a computer aided design (CAD) tool, the first

dependent graph having modeling information of the first mechanical design and the replicated sub-graph having modeling information of a subpart of the first mechanical design, and to execute the second plurality of programming instructions to merge the replicated sub-graph into a second dependent graph of a second mechanical design of the CAD tool to reuse the subpart of the first mechanical design in the second mechanical design.

25. (Amended) An apparatus comprising:

means to replicate a subset of a first modeling representation of a first mechanical design responsive to instructions identifying a subpart of the first mechanical design of a computer aided design (CAD) tool; and

means to merge the replicated subset into a second modeling representation of a second mechanical design of the CAD tool to reuse the identified subpart of the first mechanical design in the second mechanical design.

26. (Amended) In a computer system, a method of operation comprising the steps of:

replicating a subset of a first modeling representation of a first mechanical design of a computer aided design (CAD) tool responsive to instructions identifying a subpart of the first mechanical design; and

merging the replicated subset into a second modeling representation of a second mechanical design of the CAD tool to reuse the identified subpart of the first mechanical design in the second mechanical design.
